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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/774,858	01/31/2001	Yoshihiro Izumi	55560(904)	9616
21874	7590	08/03/2004	EXAMINER	
EDWARDS & ANGELL, LLP P.O. BOX 55874 BOSTON, MA 02205			CHOWDHURY, TARIFUR RASHID	
			ART UNIT	PAPER NUMBER
			2871	

DATE MAILED: 08/03/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/774,858

Applicant(s)

IZUMI ET AL.

Examiner

Tarifur R Chowdhury

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 27-34 is/are allowed.
- 6) ☒ Claim(s) 1-26 and 36-39 is/are rejected.
- 7) ☒ Claim(s) 35 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claims 1, 2, 6-8, 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by Wakai et al., (Wakai), USPAT 5,166,085.**

3. Wakai discloses (col. 1, lines 12-13; col. 8, lines 16-28) and shows in Fig. 9, an active matrix substrate (101), comprising:

- electrode wires constituted by scanning electrode wiring and signal electrode wiring that are arranged in a lattice (Fig. 1);
- an insulating film (108) provided at least on the electrode wires so as to have openings (109) in predetermined areas on the signal electrode wiring (107);
and
- a contact metal (119) (applicant's metal layer) in the opening of the insulating film (108) and in contact with the electrode wiring (107) to cap the opening.

Wakai also discloses that the active matrix substrate is used in a liquid crystal display (applicant's electro-optical medium) (col. 1, lines 36-38).

Accordingly, claims 1, 7 and 12 are anticipated.

As to claim 2 and 8, Wakai discloses (col. 8, lines 22-24) that the metal layer consists of nickel, gold, silver chromium, or the like.

As to claims 6 and 13, Wakai also discloses that the metal layer is formed by electroless plating (applicant's wet plating).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 3, 4, 9, 10, 14-17, 19-22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai as applied to claims 1, 2, 6-8, 12 and 13 above.

7. As to claims 3, 9 and 16, using plurality of layers to form a metal layer is common and known in the art for several reasons such as for obtaining low resistance, high transmittance, etc. and thus would have been obvious.

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8. As to claim 14, using the active matrix substrate in an image-capturing device is considered as intended use and thus would have been obvious. Further, common and known structure for an image-capturing device includes a photoconductor.

As to claim 15, Wakai discloses (col. 8, lines 22-24) that the metal layer consists of nickel, gold, silver chromium, or the like.

As to claims 4, 10 and 17, Wakai differs from the claimed invention because he does not explicitly disclose that either the scanning electrode wiring or the signal electrode wiring are fabricated from a transparent conductive oxide film.

However, it is common and known in the art that a transparent conductive oxide film such as ITO has superior properties such as a high transparency, a lower resistivity, a larger etch rate, a better chemical stability, and a stronger adherence to the substrate.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to fabricate either the scanning electrode wiring or the signal electrode wiring from a transparent conductive oxide film such as ITO so that a high transparency, a lower resistivity, a larger etch rate, a better chemical stability wiring is obtained.

As to claims 19 and 20, typically photoconductor for an image-capturing device is made of amorphous selenium. Further typical structure for an image-capturing device includes a luminescent layer.

As to claim 21, Wakai also discloses that the metal layer is formed by electroless plating (applicant's wet plating).

As to claim 22, since the method of manufacturing the active matrix substrate is merely a list of forming each component and each component must be formed to make the device, the method of manufacturing would have been obvious in view of the device.

As to claim 26, Wakai also discloses that the metal layer is formed by electroless plating (applicant's wet plating).

9. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai as applied to claims 1, 2, 6-8, 12 and 13 above and in view of Iwai et al., (Iwai), USPAT 5,446,569.

10. Wakai differs from the claimed invention because he does not explicitly disclose that the insulating film is made of SiNx.

Iwai discloses a liquid crystal display device having an insulating layer that is made of SiNx. Iwai also discloses that insulating layers made of SiNx has better insulation performance and transparency (col. 8, lines 16-24).

Iwai is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use insulating layers made of SiNx.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the insulating layer of Wakai with an insulating layer that is made of SiNx so that better insulation performance and transparency is obtained, as per the teachings of Iwai.

Accordingly, claims 5 and 11 would have been obvious.

11. Claims 18 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai as applied to claims 3, 4, 9, 10, 14-17, 19-22 and 26 above and in view of Iwai.

12. Wakai differs from the claimed invention because he does not explicitly disclose that the insulating film is made of SiNx.

Iwai discloses a liquid crystal display device having an insulating layer that is made of SiNx. Iwai also discloses that insulating layers made of SiNx has better insulation performance and transparency (col. 8, lines 16-24).

Iwai is evidence that ordinary workers in the art would find a reason, suggestion or motivation to use insulating layers made of SiNx.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to substitute the insulating layer of Wakai with an insulating layer that is made of SiNx so that better insulation performance and transparency is obtained, as per the teachings of Iwai.

Accordingly, claims 18 and 23 would have been obvious.

As to claim 24, it is well known in the art that in view of low resistance and cost copper is the best material to use and thus would have been obvious to form the metal layer using copper for its low resistance and cost effectiveness.

As to claim 25, electric plating is a common and known way to form metal layers and thus would have been obvious to avail a proven technique. Further, it should also be noted electric plating is an obvious variation of electroless plating. If applicant disagrees then applicant is reminded that a restriction requirement might be proper.

13. Claims 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wakai and in view of Kim et al., (Kim), USPAT 6,198,516.

14. Wakai does not explicitly disclose the claimed storage capacitor electrode being provided apart from the scanning electrode wiring.

Kim discloses an active matrix liquid crystal display wherein storage capacitance electrode is formed apart from the scanning electrode wiring. Kim also discloses that it is required to obtain excellent display quality that a first signal applied from data line should be uniformly maintained until a second signal is applied. So as to uniformly maintain the applied signal, a storage electrode for obtaining a storage capacitance is provided at each pixel (col. 1, lines 25-31).

Kim is evidence that ordinary workers in the art would find a reason, suggestion or motivation to form a storage capacitance electrode.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the display device of Wakai by forming a storage capacitance electrode apart from the scanning electrode wiring to uniformly maintain the application of the first signal until the second signal is applied so that a display with excellent display quality is obtained, as per the teachings of Kim.

Allowable Subject Matter

15. Claims 27-34 are allowed.

16. Claim 35 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

17. In page 4 of applicant's remarks filed on 05/24/04, applicant mentioned that, "claim 22 has been amended to include the subject matter of the objected claims. Hence, with respect to claim 22, the grounds for rejection are moot." However, applicant failed to file an amendment for claim 22 as mentioned in the remarks and thus the rejection is maintained.

Response to Arguments

18. Applicant's arguments filed on 05/24/04 have been fully considered but they are not persuasive.

In response to applicant's argument that Wakai does not suggest providing openings in the insulating film in predetermined areas at least on *either* (emphasis added) the scanning electrode wiring or on the signal electrode wiring, it is respectfully pointed out to applicant that Wakai clearly shows that the opening (109) is formed in the insulating film (108) in predetermined areas on the source electrode (107). Further, it is also respectfully pointed out to applicant that interchanging the position of the source electrode and the drain electrode in a TFT structure does not change the function of the TFT and since drain electrode is a part of a drain line (signal wiring) it can be easily gleaned from Figure 9 of Wakai that the opening in the insulating film is indeed formed in predetermined areas on the signal electrode wiring.

Further, it is respectfully pointed out to applicant that Iwai was used to find a teaching for using an insulating layer that is made of SiNx and Kim was used to find a teaching for forming a storage capacitance electrode apart from the scanning electrode

wiring to uniformly maintain the application of the first signal until the second signal is applied not to find a teaching for providing openings at predetermined areas at least one or both of the scanning electrode wiring and the signal electrode wiring.

Therefore, the rejection was proper and thus maintained.

Conclusion

19. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

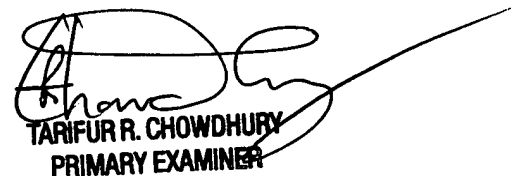
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tarifur R Chowdhury whose telephone number is (571) 272-2287. The examiner can normally be reached on M-Th (6:30-5:00) Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TRC
July 27, 2004



TARIFUR R. CHOWDHURY
PRIMARY EXAMINER